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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MARX, IRENE

ART UNIT PAPER NUMBER

1651

DATE MAILED: 03/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/830,894

Applicant(s)

JU, LU-KWANG

Examiner

Irene Marx

Art Unit

1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6-71 is/are pending in the application.
- 4a) Of the above claim(s) 35-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-34 and 71 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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The amendment filed 1/27/03 is acknowledged. Claims 1-4, 6-34 and 71 are being considered on the merits.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1-4, 6-34 and 71 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The "selection" process used is not clearly delineated in claim 1. In addition, It is uncertain how "an alternative oxidant" is identified for any and all microorganisms, the nature of which is not determined.

Inasmuch as the claims as written are directed to a process using mixed cultures of microorganisms, one of ordinary skill in the art cannot determine the process conditions with any specificity or particularity.

***Response to Arguments***

Applicant's arguments have been fully considered but they are not deemed to be persuasive.

Applicant's argument that a microorganism is selected based on the knowledge that it is capable of producing a desired biological product is noted. However, the claim designated invention requires the selection to be based on utilization of oxygen or an alternative oxidant source. With regard to the "desire" to form a product, it is unclear how one of ordinary skill in the art is to determine what is desired.

It is noted that applicants do not wish to recite a specific biological product, a specific microorganism and/or a specific alternative oxidant because in their opinion the scope of the invention would be unduly limited. However, this argument is not persuasive.

The rejection is deemed proper and it is adhered to.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 10, 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Varma *et al.*.

The claims are directed to the production of a biological product with a microorganism including bacteria, yeasts, molds and archaea in the presence of an alternative oxidant source under aerobic conditions such that the strain may utilize the alternative oxidant source.

Varma *et al.* disclose the production of cells of the microorganism *E. coli* in the presence of the alternative oxidant source acetate under aerobic conditions such that the strain uses the alternative oxidant source. See, e.g., page 3730, col. 2, paragraph 4 et seq.

Claims 1-4, 6, 10, 13, 15, 17-20, 22, 27-29, 31-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Giani *et al.*.

The claims are directed to the production of a biological product with a microorganism including bacteria, yeasts, molds and archaea in the presence of an alternative oxidant source under aerobic conditions such that the strain may utilize the alternative oxidant source.

Giani *et al.* disclose the production of cells of the microorganism *Pseudomonas aeruginosa* in the presence of the alternative oxidant source  $\text{NaNO}_3$  under aerobic conditions such that at least a portion of the cells uses the alternative oxidant source when the maximum oxygen supply is less than the cells' oxygen requirements.. See, e.g., col. 5, lines 25-67 and Example 1.

#### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not deemed to be persuasive.

Applicants allege that the reference does not teach the same process. However, in the Giani reference the experiments pertain to the cultivation of a strain *P. aeruginosa* for the production of rhamnolipids, a biological product. The microorganisms is capable of utilizing oxygen or an alternative oxidant source, such as nitrate. Applicant argues that the nitrate is

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provided as a nitrogen source rather than an alternative oxidant. However, the issue is whether or not sodium nitrate is available in the medium as an alternative oxidant. Surely, the purpose for its presence in the medium does not alter its availability to the microorganism in the culture medium as an alternative oxidant if needed. After inoculation, the culture is aerated in the presence of the alternative oxidant source is provided. It is clear that when the oxygen requirement is greater than the amount of oxygen present, then at least a portion of the microorganisms will switch to the use of the alternative oxidant source for their metabolic processes, whether this is explicitly set forth in the reference or not. Applicant argues the rate of oxygen supply. However, the relevance of this is unclear, since there is no claim designated requirement for a low rate of oxygen supply. The process requires "a maximum oxygen supply rate to the culture medium" and only when the cellular requirement is greater than the supply, a portion of the microorganisms "will utilize the alternative oxidant source for cellular respiration". It is noted that the size of the portion may be a cell or two.

Therefore the rejection is deemed proper and it is adhered to.

Claims 1-4, 6-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giani *et al.* taken with Brock and Wagner *et al.* for the reasons as stated in the last Office action and the further reasons below.

The claims are directed to the production of a biological product with a microorganism including bacteria, yeasts, molds and archaea in the presence of an alternative oxidant source under aerobic conditions such that the strain may utilize the alternative oxidant source.

#### ***Response to Arguments***

Applicant's arguments have been fully considered but they are not deemed to be persuasive.

The arguments directed to the Giani *et al.* reference are addressed *supra*.

Applicant argues that Brock does not teach a combined process using both aerobic and anaerobic respiration. However, the process as claimed is not "a combined process using both aerobic and aerobic respiration". Only when cellular requirements are greater than the oxygen supply will a portion of the microorganisms use the alternative oxidant. However, there is no claim designated requirement for this eventuality to take place. With respect to applicant's criticism of the process of Wagner as aerobic, it is respectfully noted the present process does not require anaerobicity at any time.

Therefore the rejection is deemed proper and it is adhered to.

No claim is allowed.

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**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Marx whose telephone number is (703) 308-2922. The examiner can normally be reached on Monday through Friday from 6:30 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn, can be reached on (703) 308-4743. The appropriate fax phone number for the organization where this application or proceeding is assigned is before final (703) 872-9306 and after final, (703) 872-9307.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Customer Service whose telephone number is (703) 308-0198 or the receptionist whose telephone number is (703) 308-1235.

  
Irene Marx  
Primary Examiner  
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